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ENERGY OFFICE

Case Study Series

Upper Michigan's Five Star Grant Home

Christine and Sam Simonetta along with their licensed builder Stephen M. Smith have created a unique Five Star Grant Home. Their project seeks a balanced approach between energy efficiency, renewable energy, comfort, and beauty. It is the first Five Star home in the grant program's history to utilize wind energy. While the house is still tied to grid power, Sam and Christine estimate the turbine will produce 60-70% of their electricity.

For starters, Sam's smart home design economized building materials, as he "stacked" the 1700 sq ft story-and-a-half house on top of the garage. He also engaged a saltbox design elongating the south-facing wall to incorporate passive solar. A wise design is where energy efficiency begins.

The Upper Michigan location and harsh winters demanded extra attention to insulation. The couple chose 6" Structural Insulated Panel walls that boast an insulating value of R-24, and their thermal siding takes the total wall value to R-27. The roof is insulated with 10" of Icynene, an innovative, non-toxic product that also doesn't promote mold growth, which will boost their roof insulation to an R-55. Next is a 92% efficient boiler for their radiant in-floor heat. To keep the heat in during cold months, they have triple paned windows that have a total unit value of R-4.3.

From the beginning, Sam and Christine aimed to balance aesthetics with efficiency. The home includes rock knobs and wood railings found on the property. They brought character into the new structure by using vintage doors and a classic, old window for interior daylighting. They even extended the reused category to include an old but sound Mackinac Bridge beam as the main support in the basement.

Other energy efficient features include Energy Star appliances, compact fluorescent bulbs, phantom load reduction including switches for any continuous energy drains, masonry stove with water loop for preheating domestic hot water, and an energy recovery ventilator to bring fresh air into this tight house with minimum energy loss. To conserve water, they installed sink/shower flow restrictors and dual flush kits on their toilets.

With an eye to clean, renewable energy, they also wanted to keep the inside of the house as environmentally friendly and non-toxic as possible. They've chosen to showcase bamboo flooring in two rooms, as bamboo grows quickly and can be harvested every 3-5 years, and it is lovely, durable flooring. They've chosen low or no VOC paints and varnishes as well to minimize out gassing of toxic chemicals.

To them, the crowning jewel is the 2.5 kW wind turbine from Scotland that proudly stands atop Onota Hill overlooking Lake Superior that will gather many winds and produce clean electricity for this simply efficient Five Star home.

Feel free to contact us if you have any ideas for case studies:

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